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Nota di contenuto	Preface; 1 Introduction; 1.1 What Is Regression Analysis?; 1.2 Publicly Available Data Sets; 1.3 Selected Applications of Regression Analysis; 1.3.1 Agricultural Sciences; 1.3.2 Industrial and Labor Relations; 1.3.3 History; 1.3.4 Government; 1.3.5 Environmental Sciences; 1.4 Steps in Regression Analysis; 1.4.1 Statement of the Problem; 1.4.2 Selection of Potentially Relevant Variables; 1.4.3 Data Collection; 1.4.4 Model Specification; 1.4.5 Method of Fitting; 1.4.6 Model Fitting; 1.4.7 Model Criticism and Selection 1.4.8 Objectives of Regression Analysis 1.5 Scope and Organization of the Book; Exercises; 2 Simple Linear Regression; 2.1 Introduction; 2.2 Covariance and Correlation Coefficient; 2.3 Example: Computer Repair Data; 2.4 The Simple Linear Regression Model; 2.5 Parameter Estimation; 2.6 Tests of Hypotheses; 2.7 Confidence Intervals; 2.8 Predictions; 2.9 Measuring the Quality of Fit; 2.10 Regression Line Through the Origin; 2.11 Trivial Regression Models; 2.12 Bibliographic Notes; Exercises; 3 Multiple Linear Regression; 3.1 Introduction; 3.2 Description of the Data and Model 3.3 Example: Supervisor Performance Data 3.4 Parameter Estimation; 3.5 Interpretations of Regression Coefficients; 3.6 Properties of the Least Squares Estimators; 3.7 Multiple Correlation Coefficient; 3.8 Inference for Individual Regression Coefficients; 3.9 Tests of

Hypotheses in a Linear Model; 3.9.1 Testing All Regression Coefficients Equal to Zero; 3.9.2 Testing a Subset of Regression Coefficients Equal to Zero; 3.9.3 Testing the Equality of Regression Coefficients; 3.9.4 Estimating and Testing of Regression Parameters Under Constraints; 3.10 Predictions; 3.11 Summary; Exercises
Appendix: Multiple Regression in Matrix Notation
4 Regression Diagnostics: Detection of Model Violations; 4.1 Introduction; 4.2 The Standard Regression Assumptions; 4.3 Various Types of Residuals; 4.4 Graphical Methods; 4.5 Graphs Before Fitting a Model; 4.5.1 One-Dimensional Graphs; 4.5.2 Two-Dimensional Graphs; 4.5.3 Rotating Plots; 4.5.4 Dynamic Graphs; 4.6 Graphs After Fitting a Model; 4.7 Checking Linearity and Normality Assumptions; 4.8 Leverage, Influence, and Outliers; 4.8.1 Outliers in the Response Variable; 4.8.2 Outliers in the Predictors; 4.8.3 Masking and Swamping Problems
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4.9.1 Cook's Distance; 4.9.2 Welsch and Kuh Measure; 4.9.3 Hadi's Influence Measure; 4.10 The Potential-Residual Plot; 4.11 What to Do with the Outliers?; 4.12 Role of Variables in a Regression Equation; 4.12.1 Added-Variable Plot; 4.12.2 Residual Plus Component Plot; 4.13 Effects of an Additional Predictor; 4.14 Robust Regression; Exercises; 5. Qualitative Variables as Predictors; 5.1 Introduction; 5.2 Salary Survey Data; 5.3 Interaction Variables; 5.4 Systems of Regression Equations; 5.4.1 Models with Different Slopes and Different Intercepts
5.4.2 Models with Same Slope and Different Intercepts

Sommario/riassunto

The essentials of regression analysis through practical applications
Regression analysis is a conceptually simple method for investigating relationships among variables. Carrying out a successful application of regression analysis, however, requires a balance of theoretical results, empirical rules, and subjective judgement. Regression Analysis by Example, Fourth Edition has been expanded and thoroughly updated to reflect recent advances in the field. The emphasis continues to be on exploratory data analysis rather than statistical theory. The book offers in-depth treatment of regression diagnostics, transformation, multicollinearity, logistic regression, and robust regression. This new edition features the following enhancements: Chapter 12, Logistic Regression, is expanded to reflect the increased use of the logit models in statistical analysis A new chapter entitled Further Topics discusses advanced areas of regression analysis Reorganized, expanded, and upgraded exercises appear at the end of each chapter A fully integrated Web page provides data sets Numerous graphical displays highlight the significance of visual appeal Regression Analysis by Example, Fourth Edition is suitable for anyone with an understanding of elementary statistics. Methods of regression analysis are clearly demonstrated, and examples containing the types of irregularities commonly encountered in the real world are provided. Each example isolates one or two techniques and features detailed discussions of the techniques themselves, the required assumptions, and the evaluated success of each technique. The methods described throughout the book can be carried out with most of the currently available statistical software packages, such as the software package R.
